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ABSTRACT

The purpose of this study was to investigate the occupational and educational aspirations and expectations of 12th grade students to determine whether objective measures of occupational needs and preferences for work were reliable and to determine if the students' plans were realistic and similar to those of their parents. A sample of 46 Grade 12 students (22 males and 24 females) were identified, and an expression of their idealistic and realistic occupational choices were obtained and compared. Conclusions were that 12th grade boys and girls have similar educational aspirations but different occupational aspirations, they appear to be capable of making a realistic occupational-educational commitment, and their educational aspirations are similar to their parents' but their occupational aspirations are quite different. (Author/GEB)

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the relationship of selected factors to the occupational-educational choices of twelfth grade students

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SUMMARY

One of the major problems facing vocational counselors and instructors is that of assisting high school students in making realistic occupational and educational choices. While some theories suggest that students make their occupational choices by matching the requirements of a job with their capabilities, others suggest that the occupational and educational choices of students are more dependent on home environment (i.e. parents) and/or psycho-social factors such as occupational needs and preferences for work activities.

This exploratory study investigated the occupational and educational aspirations and expectations of twelfth grade high school students. The specific purposes of the study were to determine whether (a) objective measures of occupational needs and preferences for work activities were reliable and capable of discriminating among the clusters of idealistic (aspirations) and realistic (expectations) choices made by twelfth grade boys and girls, respectively, and (b) the occupational and educational plans of twelfth grade students were realistic and similar to those of their parents.

The procedure for conducting the study consisted of identifying a group of twelfth grade boys and girls and then obtaining and comparing the concurrent expression of their idealistic (aspirations) and realistic (expectations) occupational choices with (a) corresponding measures of their occupational needs and preferences, and (b) parental occupational and educational achievements. Idealistic occupational choice was defined as the occupation the students ultimately aspired to enter whereas realistic occupational choice was defined as the occupation they actually expected to enter.

The sample consisted of forty-six students (22 males and 24 females) enrolled in a mandatory twelfth grade social studies class at University High School, Minneapolis, Minnesota during the Spring of 1967. The students were about seventeen years old, came from upper middle-class families, and expected to attend college. The data support the following conclusions concerning the study population: (a) twelfth grade boys and girls have similar educational aspirations but different occupational aspirations; (b) twelfth grade boys and girls appear to be capable of making a realistic occupational-educational commitment; (c) the educational aspirations of twelfth grade students are similar to their parents, but their occupational aspirations are quite different; (d) measures of occupational needs are reliable, but are not capable of discriminating among the clusters of either the idealistic or the realistic occupational choices of twelfth grade students; and (e) measures of preferred work activities have questionable reliability and are not capable of discriminating among the clusters of either the idealistic or the realistic occupational choices of twelfth grade students.

Since the evidence produced by the study was greatly affected by the homogeneity of the sample, the following recommendations are made: (a) replicate the study using a larger, more heterogeneous group of students and (b) continue testing the sensitivity of occupational need and preference measures.

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INTRODUCTION

Background of the Problem

One of the major problems confronting vocational educators is to determine how best to help high school students make realistic occupational-educational decisions. Vocational counselors want students to make decisions that will ultimately lead to self-satisfaction, self-actualization and self-fulfillment. Vocational administrators and instructors, on the other hand, are concerned with providing students with the type of training that will facilitate their on-the-job success and satisfactoriness. As the variety of jobs continue to increase and as the training requirements for them continue to be altered by technological advancements, the problems of helping students make both realistic educational and occupational choices becomes more difficult and critical.

Proponents of career development suggest that the occupational and educational choices of students are influenced first by various social and environmental forces (the most important of which is the occupational and educational characteristics of their parents) and second by particular sets of psycho-social factors (e.g. occupational needs, values, interests, perceptions and preferences for certain work roles). It is hypothesized that these factors are related to the expressed occupational aspirations and expectations of students as well as the realism of their vocational choices. While this hypothesis seems plausible, there is very little empirical evidence to support the contention that the vocational choices of students are related to the occupational or educational choices of their parents or their own particular set of occupational needs and preference for work activities.

Statement of the Problem

The problem investigated in this exploratory study was to determine whether selected social and psychological factors were related to the occupational aspirations and expectations of twelfth grade male and female high school students. Specifically, the purposes of the study were to determine whether (a) objective measures of occupational needs and preferences for work activities were reliable and capable of discriminating between and among the clusters of idealistic and realistic occupational choices of high school students and (b) the occupational and educational plans of high school students were realistic and similar to the occupational and educational achievements of their parents.

In order to obtain a solution to the problem, answers to the following questions were sought:

Question #1: Are there differences between twelfth grade boys and girls in terms of the clusters of their expressed idealistic and realistic occupational choices?

Differences between the occupational choices of male and female students was determined by the proportion of students who selected the same occupational cluster for their (a) idealistic and (b) realistic occupational choice respectively.

Question #2: Are the occupational and educational plans of twelfth grade boys and girls similar to the occupational and educational achievements of their parents?

The similarity between the occupational and educational plans of the students and their parents was determined by descriptively comparing (a) the proportion of students who planned to go to college whose parents had graduated from college, and (b) the extent of agreement between the students' expressed idealistic and realistic occupational choice clusters and the occupational cluster(s) of either employed parent.

Question #3: Are there differences between the idealistic and realistic choices of twelfth grade boys and girls respectively in terms of (a) expressed job titles, (b) measures of occupational needs, and (c) measures of preferred work activities?

The extent of agreement between the idealistic and realistic choices of high school students was determined separately for boys and girls according to (a) the amount of similarity between the expressed job titles for their realistic and idealistic occupational choices, (b) the correlation between measures of their idealistic and realistic occupational needs and (c) the correlation between measures of their preferred idealistic and realistic work activities. Idealistic and realistic occupational needs were defined as the twenty mean scale scores on the MIQ (Minnesota Importance Questionnaire) and the MJDQ (Minnesota Job Description Questionnaire), respectively. Preferred idealistic and realistic work activities were determined by two administrations of the COPS (California Occupational Preference Survey). On the first administration (COPS-1), students were directed to respond in terms of their expressed idealistic occupational choice; on the second administration (COPS-2), they were directed to respond in terms of their expressed realistic occupational choice.

Question #4: Are there differences among clusters of idealistic and realistic occupational choices for a group of twelfth grade boys and girls as measured by the mean scale scores and a profile of mean scale scores of two measures of occupational needs?

Question #5: Are there differences among clusters of idealistic and realistic occupational choices for a group of twelfth grade boys and girls as measured by the mean scale scores and a profile of mean scale scores on two measures of preferred occupational activities?

Differences among the clusters of idealistic and realistic occupational choices of twelfth grade boys and girls were determined by comparing the twenty mean scale scores for the MIQ and MJDQ respectively. Similarly, differences among the clusters of idealistic and realistic occupational choices were also determined by comparing the fourteen mean scale scores and profiles of mean scale scores for the first (COPS-1) and second (COPS-2) administration of the California Occupational Preference Survey.

RATIONALE OF THE STUDY

The rationale for the study was based on research findings dealing with environmental factors which directly or indirectly influence the occupational-educational decisions of youth (e.g. socio-economic background, parents, etc.), and psycho-social factors which the student has developed and uses for reality testing and decision making. Multifactor, longitudinal career development projects (Super, 1963; Tiedeman, 1963) and reviews of research (Horner, Buterbough, Curefoot, 1967) have shown that both types of factors must be considered in order to adequately explain and understand the career decision of young students. The purpose of this review is to briefly summarize the more cogent research pertaining to these factors and provide evidence to support the rationale for this study.

Environmental Factors

Implicit in some research is the assumption that one of the most basic of environmental influences on the educational and occupational decisions of children are the characteristics of the immediate family. It is believed (Roe and Siegleman, 1963, 1964) that the parent's attitudes and relationship with their children greatly influence the child's occupational interests and eventual vocational decisions. This idea was partially confirmed (Green and Parker, 1965) in a study which demonstrated that parents who have developed a highly personal relationship with their children have the greatest influence on the development of the expressed occupational choices of seventh grade students. Evidence also suggested that parent-child relationships tend to influence male and female children differently.

Other research efforts (Kennane and Bannon, 1964) have shown that the occupational and educational achievements of parents has an effect on the aspirations of their children; in homes where the occupational education level of the father was superior to the mother, daughters tended to have lower levels of occupational aspirations than in homes where the education of the parents was about equal. In a similar study (Steimel and Suziedelis, 1963), it was found that the dominance of one parent had a demonstrable affect on the development of their children's occupational interests. In another investigation (Duncan and Hodges, 1963), it was concluded that the amount of formal education possessed by the father was a more important influence on the male child's occupational aspirations and achievements than the father's occupation or level of employment.

Research has also shown that the socio-economic background of the student has influence on his vocational aspiration and choice. In a follow-up of a sample of 3000 high school male graduates (Little, 1965), it was found that (a) college bound students were predominantly high ability students coming from a high socio-economic background, whose parents were well educated, and (b) non-college bound students represented a cross-section of the population in terms of their ability and socio-economic status. It was concluded that differences between college and non-college bound students were accounted for by (a) rural vs. urban backgrounds, (b) socio-economic status and education of parents, and (c) the availability of post-high school educational opportunities.

Other studies have shown that the occupational aspirations of children appear to be related to various mobility patterns (Smelser, 1963); sons from upward mobile families had higher occupational aspirations than sons from static or downward mobile families. Similarly, Stevic and Uhlig (1970) have shown that youth who stay in low socio-economic rural environments tend to have lower levels of occupational aspiration than youth who migrate to higher level socio-economic urban centers.

In addition to having an affect on the occupational aspirations of students, socio-economic background also affects their occupational choices (expectations). It has been shown (Henderson, 1966) that students from high socio-economic backgrounds have less discrepancy between their idealistic and realistic occupational choices than students from low socio-economic environments. Students who are socio-economically disadvantaged tend to aspire to, but rarely enter, highly prestigious occupations.

Thus, there appears to be considerable evidence to suggest that environmental factors (especially the educational-occupational characteristics of the parents) do, in fact, tend to influence the educational-occupational aspirations of their children. Children who belong to families with high socio-economic status, who live in urban

areas, and who also have well educated parents tend to have high, but realistic, educational-occupational aspirations. On the other hand, students belonging to families with low socio-economic status, and who live in rural communities, do not have the same educational and occupational opportunities and consequently tend to have lower level aspirations. Evidence also suggests that environmental factors may affect the educational and occupational decisions of boys and girls differently.

Psychological Factors

Another area of research has dealt primarily with trying to measure and then relate certain psychological factors to the occupational aspirations and expectations of students. It is believed that the psychological factors are relatively unique to an individual and have a very direct effect upon the career decision-making process.

It has been suggested (Gonyea, 1961) that individuals develop unique perceptions of the world of work because of the needs they feel must be satisfied by an occupation, and then they make their occupational decisions accordingly. Several studies have shown that measures of occupational needs are capable of discriminating among persons employed in different occupational clusters. For example, it was shown that measures of occupational needs could discriminate between (a) blue vs. white collar workers (Gunderson and Miller, 1966), (b) people vs. non-people oriented occupations (Miller, 1962), and (c) scientific vs. non-scientific occupations (Hoffman, 1963).

Additional research pertaining to the role of occupational needs has been conducted by the Industrial Relations Center, University of Minnesota. The Center has developed a theory of the work adjustment of adult workers in which the occupational needs-reinforcer of the worker and the job are central (Dawis, England, Lofquist, 1964; Dawis, Lofquist, Weiss, 1968; Betz, et. al., 1966). Work adjustment is perceived as the correspondence between (a) an individual's occupational needs as measured by the twenty scales of the Minnesota Importance Questionnaire (MIQ), and the reinforcers of the job as derived from the Minnesota Job Description Questionnaire (MJDQ), and (b) the individual's abilities and the ability requirements of the job.

A series of studies was designed by the Industrial Relations Center to develop and then test the reliability and validity of the MIQ. It was demonstrated that the instrument was capable of (a) discriminating between disabled vs. non-disabled groups of workers, workers in different occupations, and employed vs. pre-employed adults, and (b) yielding satisfactory test-retest and internal consistency reliability coefficients (Weiss, Dawis, England, Lofquist, 1964a). In a subsequent study (Weiss, Dawis, England, Lofquist, 1964b), the construct validity of the MIQ was established; it was shown that occupational needs were, in fact, related to measures of job satisfaction which in turn tends to lead to job tenure.

The Minnesota Job Description Questionnaire (MJDQ) contains twenty scales which are analogous to those of the MIQ. The instrument was designed to identify the need reinforcers for an actual, realistic job setting (Borgen, et. al., 1968a). The major distinction between the MIQ and MJDQ is that the MIQ provides a measure of a person's "ideal" occupational needs and the MJDQ provides a measure of the needs which are satisfied (need reinforcers) by the job.

The data obtained from the MJDQ was used to produce occupational reinforcer patterns (ORP) which could discriminate among 81 different occupations or occupational clusters (Borgen, 1968b).

While additional research is necessary to establish the validity and reliability of the ORP's and the MJDQ, there seems to be sufficient evidence to suggest that (a) individuals differ in terms of their idealistic occupational needs as measured by the MIQ and that (b) occupations also differ in terms of the need reinforcers they provide workers. There is, however, no indication that the occupational needs are related to the vocational choices of inexperienced high school students.

There is evidence to suggest, however, that enrollment in various occupational training programs is, at least in part, a function of occupational needs (Pucel, Nelson, 1968; Pucel, Nelson, Wheeler, 1970). It was found that the MIQ was capable of (a) discriminating among the graduates of various post high school occupational training programs for both male and female students, and (b) differentiating between those who graduate or drop from a particular training curriculum. These findings strongly suggest that needs are probably related to the vocational aspirations and expectations of high school students, as well as to their eventual vocational choices.

There have also been some questions about the ability of high school students to discriminate between their idealistic and realistic occupational preferences and to make realistic occupational decisions. Two separate studies (Hollender, 1967; Hewer, 1966) have shown that the best predictors of realistic occupational choices were age and grade level; older students in the upper grades tend to make more realistic occupational decisions than younger students in the lower grades. This has been explained (Miller, 1961) by the fact that since older, more mature students have had a greater opportunity for "reality testing" they are more capable of distinguishing between their realistic and idealistic occupational preferences.

Another study (Montesori and Geist, 1964) attributed the realistic occupational choices of twelfth grade students to the fact that they have had a greater opportunity to match their abilities, interests and needs with the requirements of various types of working conditions before making a commitment to an occupation. The authors conclude that age and maturity, together with a greater opportunity for "reality testing", explains the reason why twelfth grade students are capable of making realistic vocational choices.

There appears to be general agreement that both occupational needs and perception of work roles seem to be related to the occupational aspirations and eventual decisions of students. However, measures of needs and perceptions have been relatively gross and have been successfully used to discriminate between only broad occupational categories (e.g., white vs. blue collar, teaching vs. non-teaching, etc.). Research has not demonstrated that objective measures of occupational needs and preferred work activities (perceptions of work role) are capable of making finer discriminations among clusters of occupational choices made by high school students. In addition, past research has focused on either mature adult workers or college students; very little is known about whether the occupational needs and perceptions of high school students are related to their idealistic and realistic occupational choices, or whether their choices are simply a reflection of those selected by their parents.

PROCEDURES OF THE STUDY

Methodology

The methodology employed in this study suggests that the occupational aspirations and expectations of high school seniors can, to some degree, be explained by differences in (a) sex, (b) characteristics of parents, (c) occupational needs, and (d) preferred work activities. The study, was, therefore, dependent upon identifying a group of male and female twelfth grade students and obtaining from them expressions of their idealistic and realistic occupational choices, which could then be compared with (a) measures of occupational needs and measures of preferred work activities for each of their occupational choices, and (b) the occupational-educational achievements of their parents. Besides providing a descriptive comparison of the career aspirations and expectations for a group of male and female high school seniors, this methodology provides a cross-sectional view of the relationships among vocational choices and other relevant variables.

Population and Sample

The population of students consisted of all the seniors in the University of Minnesota experimental school (University High School) who were enrolled in a required social science course during the Spring of 1967. The population contained twenty-two (22) boys and twenty-four (24) girls (N=46).

Table 1 shows the personal characteristics of the students, together with the occupational and educational attainments of their parents. A majority of the students were about 17 years old and had only minimal work experience (less than 1 year). Without exception,

Table 1

OCCUPATIONAL AND EDUCATIONAL CHARACTERISTICS OF THE SAMPLE OF MALE AND FEMALE HIGH SCHOOL SENIORS AND THEIR PARENTS

CHARACTERISTICS	Male (N=22)	Female (N=24)
AVERAGE AGE	17.4	17.3
WORK EXPERIENCE		
1. Average Number of Summers Employed	2.0	1.2
CHARACTERISTICS OF FATHER		
1. Occupational Level:		
(a) professional-business	18	17
(b) non-professional	4	7
2. Educational Experience		
(a) average years of education	15.9	15.6
(b) average years of college	3.5	2.6
(c) number of college graduates	13.0	10.0
CHARACTERISTICS OF MOTHER		
1. Occupational Level:		
(a) housewife	11	11
(b) professional-business	5	6
(c) non-professional	6	7
2. Educational Experience		
(a) average years of education	14.7	14.9
(b) average years of college	2.4	2.0
(c) number of college graduates	11.0	11.0
EDUCATIONAL PLANS		
1. Number Planning to Attend:		
(a) Four Year College	21	23
(b) Junior College	1	1
(c) Vocational School	0	0

both groups of male and female students expected to attend some type of post-secondary educational institution upon graduating from high school. Ninety-six percent (44 of 46) planned to attend a four year college and four percent (2 of 46) planned to attend a two year junior college. None of the students planned to attend a vocational school.

The occupational-educational accomplishments of their parents showed that most of the students came from families in which both the father and mother were well educated (15.9 and 14.8 years, respectively) and were typically employed in professional or business occupations. This implies that the sample of students was probably from upper-middle class families with relatively high socio-economic status.

Administration

Six instruments were used to collect the data from students: two were personal history forms; two were measures of the students' occupational needs; two were measures of the students' preferences for work activities.

The personal history forms were used to obtain data about each student and his parents, together with an expression of his educational and occupational plans. On Personal History Form #1, students were asked to provide information about themselves and to give the title of the occupation they would ultimately (idealistically) like to enter regardless of psychological or financial constraints (aspirations). On Personal History Form #2, students were asked to provide information about the occupational and educational achievements of both their parents, as well as to provide the title of the occupation they realistically expected to enter when certain practical limitations and constraints were considered (expectations).

Two different instruments were used to obtain measures of the occupational needs to be satisfied by the students' idealistic and their realistic occupational choices. The Minnesota Importance Questionnaire (MIQ) measured the needs the student perceived would be satisfied by the occupation he idealistically aspired to enter, and the MJDQ measured the needs the student perceived would be satisfied by the occupation he realistically expected to enter. Although the two instruments were different, they measured the same twenty occupational needs. The instruments were developed, tested, and used by the Industrial Relations Center, University of Minnesota, as part of a longitudinal research effort to develop a theory of work adjustment. The reliability and construct validity of both instruments have been demonstrated and appear to be satisfactory.

Two administrations of the California Occupational Preference Survey were necessary to obtain measures of the students' preferred work activities. The first administration of the California Occupational

Preference Survey (COPS-1) directed students to identify the activities that they believed were performed by workers in the occupation they chose as "ideal". The second administration (COPS-2) three weeks later, directed students to make similar judgments about activities performed by workers in the occupations they realistically expected to enter. Since the directions and response set for responding to the same instrument on two separate administrations were different, qualitative differences in the responses were expected.

The California Occupational Preference Survey provides information about fourteen groups of occupations. Each group consists of either professional or skilled level occupations within eight different occupational fields or areas. (For a detailed explanation of standardized instruments used in the study, the appropriate test manuals should be consulted.)

The data were collected during two test sessions held three weeks apart. The first session was used to gather data about the students' idealistic occupational aspirations; the second test session gathered data about the students' realistic occupational expectations. Appropriate rest periods were provided during test sessions. During the first session, the following three instruments were administered: (1) Personal History Form #1, (2) Minnesota Importance Questionnaire (MIQ), and (3) California Occupational Preference Survey (COPS-1). At the second session, three instruments were administered: (1) Personal History Form #2, (2) Minnesota Job Description Questionnaire (MJDQ), and (3) California Occupational Preference Survey (COPS-2).

All the instruments were scored and tabulated by the investigator, and then punched on computer cards for appropriate analysis.

Occupational Clusters

Using a modification of Roe's two way classification scheme, eight major occupational areas were identified and logically reduced to four primary occupational clusters, each involving no more than two occupational areas. The eight occupational areas and respective primary clusters are listed below:

OCCUPATIONAL AREA (Field)	PRIMARY OCCUPATIONAL CLUSTER
1. Science 2. Technology	Cluster I (Science, Technology)
3. Service 4. General Cultural	Cluster II (Service, General Cultural)
5. Arts and Entertainment	Cluster III (Arts and Entertainment)
6. Business 7. Organization	Cluster IV (Business, Organization)
8. Outdoor	Cluster V (Outdoor)

Appendix E provides a listing of the major job titles and occupational levels for each of the eight occupational areas or fields. Procedurally, the title of the students' idealistic and realistic vocational choices was first classified according to one of the eight occupational areas and then according to one of the five primary occupational clusters. The primary clusters represented mutually exclusive and exhaustive categories with respect to both the students' idealistic and realistic occupational choices.

Analysis

Throughout the study, data were analyzed separately for male and female students. Both descriptive and inferential parametric and non-parametric statistics (e.g. Chi square tests of independence, correlation statistics and percentiles) were used to (a) compare the occupational-education achievements of the parents with the occupational-educational expectations and aspirations of their children, and (b) test for differences between the students' idealistic and realistic occupational choices.

One way analysis of variance and a test of profile similarity were used to determine whether there were differences among clusters of occupational choices in terms of mean scale scores on each of four standardized instruments. USMT 610, a general linear hypothesis program available at the Numerical Analysis Center, University of Minnesota, was used to compute the F statistic for analysis of variance tests. A non-parametric technique (Du Mas 1946, 1947a, 1947b), developed for use in clinical psychology, was used to test whether the profile of mean scale scores for each of the standardized instruments was similar for pairs of occupational choice clusters. This type of profile analysis has been discussed by Rulon, Tiedeman and Totsuoka (1967) and has been used to test for differences among the graduates of several occupational curricula (Pucel and Nelson, 1968).

Reliability

Hoyt's analysis of variance technique was used to calculate the reliability coefficient for each scale of the four standardized instruments, using the individual scores for the combined group of forty-six male and female students. The Hoyt test for reliability yields a coefficient of internal consistency which represents the proportion of total variance accounted for by the test. In similar studies (Pucel and Nelson, 1968) a criterion of $r = .80$, which accounted for sixty-four percent of the variance, was considered acceptable.

Tables 2 and 3 show the reliability coefficients for each scale of the two measures of occupational needs (MIQ and MJDQ) and for each scale of the two measures of preferred occupational activities (COPS-1) and (COPS-2). While the occupational need measures appear to have satisfactory reliability, the reliability measures of preferred activities leave a great deal to be desired.

Table 2

HOYT RELIABILITY COEFFICIENTS FOR THE TWENTY MIQ AND MJDQ SCALES FOR THE TOTAL SAMPLE OF STUDENTS

Scale	MIQ (N = 46)	MJDQ (N = 46)
1. Ability Utilization	.92	.88
2. Achievement	.90	.84
3. Activity	.88	.72
4. Advancement	.89	.95
5. Authority	.98	.75
6. Company Policies and Practices	.91	.90
7. Compensation	.72	.88
8. Co-Workers	.86	.92
9. Creativity	.92	.90
10. Independence	.89	.84
11. Moral Values	.84	.80
12. Recognition	.85	.83
13. Responsibility	.86	.76
14. Security	.86	.92
15. Social Service	.92	.90
16. Social Status	.84	.93
17. Supervision - Human Relations	.87	.85
18. Supervision - Technical	.87	.82
19. Variety	.85	.89
20. Working Conditions	.84	.90

Table 3

HOYT RELIABILITY COEFFICIENTS FOR THE FOURTEEN COPS(1) AND COPS(2) SCALES FOR THE TOTAL SAMPLE OF STUDENTS

Scale	COPS(1) (N = 46)	COPS(2) (N = 46)
1. Aesthetic, Professional	.63	.64
2. Aesthetic, Skilled	.73	.58
3. Business, Professional	.71	.47
4. Business, Skilled	.46	.49
5. Clerical	.62	.56
6. Linguistic, Professional	.54	.65
7. Linguistic, Skilled	.73	.56
8. Outdoor	.68	.40
9. Science, Professional	.40	.41
10. Science, Skilled	.63	.48
11. Service, Professional	.69	.61
12. Service, Skilled	.51	.57
13. Technical, Professional	.60	.41
14. Technical, Skilled	.64	.47

FINDINGS

The problem investigated was to determine whether concurrent measures of occupational needs, occupational perceptions and the occupational-educational backgrounds of parents are differentially related to the occupational aspirations and the occupational expectations of male and female twelfth grade students. In order to provide an answer to this problem, six questions were posed. The data and answer to each are presented and discussed in this section.

Question #1: Are there differences between twelfth grade boys and girls in terms of their expressed idealistic and realistic occupational choices?

Table 4 shows the frequency distribution and percent of boys and girls who selected one of five primary occupational clusters for their idealistic and realistic occupational choices. Two types of comparisons were made; first comparisons were made to determine whether boys and girls select proportionately different types of occupational clusters and second, comparisons were made to determine whether there were differences between the idealistic and realistic occupational choices for each group of students.

Table 4

FREQUENCY DISTRIBUTION AND PERCENTS FOR THE CLUSTERS OF IDEALISTIC AND REALISTIC OCCUPATIONAL CHOICES MADE BY A GROUP OF TWELFTH GRADE BOYS AND GIRLS

Primary Occupational Clusters	Idealistic Choice				Realistic Choice			
	Boys		Girls		Boys		Girls	
	Freq.	Pct.	Freq.	Pct.	Freq.	Pct.	Freq.	Pct.
Cluster I (Sci & Tech)	8	.36	5	.21	7	.32	5	.21
Cluster II (Serv & Cult)	6	.28	15	.62	7	.32	14	.58
Cluster III (Art & Ent)	4	.18	4	.17	5	.23	5	.21
Cluster IV (Bus & Org)	4	.18	0	.00	3	.13	0	.00
Cluster V (Outdoor)	0	.00	0	.00	0	.00	0	.00
Total	22	1.00	24	1.00	22	1.00	24	1.00

Table 4 indicates that boys differ from girls in their selection of occupational clusters for their idealistic and realistic occupational choices. A greater proportion of girls than boys preferred occupations dealing with Cluster II (Serv. & Cult.), while more boys preferred Cluster IV (Bus. & Org.) than girls.

Both groups of students were consistent in expressing their idealistic and realistic occupational choices; the distributions of idealisitc and realistic occupational choices for each group of students was almost identical.

Question #2: Are the educational and occupational plans of high school seniors similar to the educational and occupational achievements of their parents?

Students were asked to describe the type of post-secondary institutions they expected to attend. In addition, students were asked to provide information about the educational-occupational achievements of each of their parents. Comparisons were made to determine whether the aspirations of students are related to (or independent of) those of their parents.

Of the forty-six students participating in the study, all but two students planned to attend a four year college after high school graduation; the other two students planned to attend a two year junior college and later transfer to a four year institution. Table 5 shows the number of boys and girls who planned to go to college and whose mother and/or father graduated from college.

Table 5

NUMBER OF STUDENTS WHOSE MOTHER AND/OR FATHER GRADUATED FROM COLLEGE

	College Graduate (Parent)	Noncollege Graduate (Parent)	Total	
Boys	15 (68.2%)	7 (31.8%)	22	100%
Girls	14 (58.3%)	10 (41.7%)	24	100%
Total	29 (63.0%)	17 (37.0%)	46	100%

A test of independence revealed the obvious - that the educational decision of boys and girls to attend college was not independent of the educational achievements of their parents (p=.80). Sixty-three percent of the students who planned to attend college came from homes in which at least one of their parents had graduated from a four year institution. In several instances, either or both of the parents held advanced professional degrees.

Since the educational expectations of students appear to be consistent with the educational achievements of their parents, it seems logical to ask whether students also select the same type of occupations as their parents. Table 6 shows the extent of agreement and disagreement between the idealistic and realistic occupational choices of students and the current occupation of either one of their employed parents. The extent of agreement was based on similarity between occupational clusters rather than specific vocational titles.

Table 6

EXTENT OF AGREEMENT AND DISAGREEMENT BETWEEN THE IDEALISTIC AND REALISTIC CHOICES OF TWELFTH GRADE BOYS AND GIRLS AND THE OCCUPATIONS OF THEIR PARENTS

	Boys		Total	Girls		Total
	Agree	Disagree	Percent	Agree	Disagree	Percent
Idealistic Choice	6 (27.3%)	16 (72.7%)	22 (100%)	4 (16.7%)	20 (83.3%)	24 (100%)
Realistic Choice	7 (31.8%)	15 (68.2%)	22 (100%)	3 (12.5%)	21 (87.5%)	24 (100%)
Total	13 (29.5%)	31 (70.5%)	44 (100%)	7 (14.5%)	41 (85.5%)	48 (100%)

A test of independence, conducted separately for the idealistic and realistic occupational choices of both boys and girls, revealed that the occupational choices made by students were independent of the current occupations of either employed parent. Chi square values for the idealistic and realistic occupational choices of boys were 4.54 ($P = .05$) and 2.90 ($P = .10$), respectively. Similarly, chi square values for the idealistic and realistic occupational choices of girls were 10.66 ($P = .001$) and 13.50 ($P = .001$), respectively. Neither the idealistic nor the realistic occupational choices of boys and girls are related to the occupations in which either parent is currently employed.

Question #3: Are there differences between the idealistic and realistic choices of twelfth grade boys and girls in terms of (a) expressed job titles, (b) measures of occupational needs and (c) measures of preferred occupational activities?

It is possible that the comparison between the expressed idealistic and realistic occupational choices of students is a relatively gross indication of potential occupational stability and satisfaction. A more direct and revealing analysis, however, can be made by determining the extent of agreement between (a) the needs an individual expects to be satisfied in his idealistic occupational choice and the needs to be satisfied by his realistic occupational choice, and (b) the work activities the student believes will be performed in his idealistic occupational choice and the activities performed in his realistic occupation choice.

Three separate tests were conducted to determine whether there are differences between the idealistic and realistic occupational choices of high school seniors. A chi square test of independence was conducted to determine whether the extent of agreement between the titles of expressed idealistic and realistic occupational choices was independent of sex. Correlations were also computed between the scale score for two measures of occupational needs and between the scale scores for two measures of preferred work activities.

Table 7 shows the number and percent of agreement between the titles of the expressed idealistic and realistic occupational choices of boys and girls respectively. Only occupational choices which had identical titles and/or descriptions were classified as "agreement"; discrepancies were classified as "disagreement".

Table 7

THE AMOUNT OF AGREEMENT AND DISAGREEMENT BETWEEN THE EXPRESSED TITLES FOR THE IDEALISTIC AND REALISTIC OCCUPATIONAL CHOICES OF TWELFTH GRADE BOYS AND GIRLS

	Agreement		Disagreement		Total	
Girls	17	(77%)	5	(23%)	22	(100%)
Boys	23	(95%)	1	(5%)	24	(100%)
Total	40	(87%)	6	(13%)	46	(100%)

Table 7 reveals two facts about the expressed occupational choices made by the group of students. Eighty-seven (87%) of the students expressed the same occupational title for both their realistic and idealistic occupational choices; only thirteen percent (13%) expressed different titles. Second, while the proportions of "agreement" and "disagreement" for boys and girls was not statistically significant at the .05 level ($\chi^2 = 3.71$), there appeared to be a slight tendency for girls to be more consistent in their responses than boys. Stated another way, boys tended to discriminate between their idealistic and realistic occupational choices more frequently than girls.

Table 8 shows the correlations which were computed between each scale of the MIQ - MJDQ and COPS-1 and COPS-2 for groups of boys and girls, respectively. The size and sign of the correlation indicates the extent of agreement between the idealistic and realistic occupational needs and the idealistic and realistic occupational preferences of students. Theoretically, high positive correlations indicate agreement between their idealistic and realistic occupational choices; high negative correlations indicate a reversal of their occupational needs and preferences for work activities.

Table 8

CORRELATIONS BETWEEN MEASURES OF IDEALISTIC AND REALISTIC OCCUPATIONAL NEEDS (MIQ-MJDQ) AND PREFERRED OCCUPATIONAL ACTIVITIES [COPS(1)-COPS (2)] FOR A GROUP OF TWELFTH GRADE BOYS AND GIRLS

Scales	Correlations of MIQ-MJDQ Scale Scores Boys (N=22)	Girls (N=24)
1. Ability Utilization	-.319	-.122
2. Achievement	-.219	-.069
3. Activity	-.183	-.069
4. Advancement	+.330	+.114
5. Authority	+.152	+.188
6. Company Policies and Practices	-.122	+.074
7. Compensation	-.072	-.463**
8. Co-Workers	-.101	+.016
9. Creativity	+.352	+.041
10. Independence	+.530**	+.453**
11. Moral Values	-.223	+.071
12. Recognition	+.346	+.820**
13. Responsibility	+.477*	+.408*
14. Security	+.478*	+.143
15. Social Service	+.709*	+.276
16. Social Status	+.276	+.310
17. Supervision - Human Relations	+.210	-.009
18. Supervision - Technical	-.255	-.143
19. Variety	+.661**	+.001
20. Working Conditions	+.010	-.532**
Number of Positive Coefficients	12	13
Number of Negative Coefficients	8	7
Total Number of Coefficients	20	20

Scales	Correlations of COPS(1) and COPS(2) Scale Scores Boys (N=22)	Girls (N=24)
1. Aesthetic, Prof.	+.248	+.164
2. Aesthetic, Skilled	+.076	+.220
3. Business, Prof.	-.134	+.138
4. Business, Skilled	+.217	+.050
5. Clerical	+.382*	+.802
6. Linguistic, Prof.	+.771**	+.275
7. Linguistic, Skilled	+.711**	+.281
8. Outdoor	+.605	+.302
9. Science, Prof.	+.181	-.054
10. Science, Skilled	+.300	+.307
11. Service, Prof.	+.155	+.210
12. Service, Skilled	+.093	+.274
13. Technical, Prof	+.221	+.198
14. Technical, Skilled	+.289	+.365*
Number of Positive Coefficients	13	13
Number of Negative Coefficients	1	1
Total Number of Coefficients	14	14

NOTE: *Significant at .05
**Significant at .01

Correlations between the MIQ and MJDQ scale scores for both groups of students indicate a substantial amount of disagreement in the needs the student perceived would be satisfied by their idealistic and realistic occupational choices. Of the twenty coefficients computed for the group of boys, twelve (12) were positive and eight (8) were negative; five of the twelve positive coefficients were statistically significant at the .05 level. For the group of girls, thirteen of the twenty coefficients were positive, but only three of these were statistically significant. Of the seven coefficients that were negative, two of them were statistically significant, showing reversals between their idealistic and realistic occupational choices in terms of "working conditions" and "compensation".

The number of positive correlations computed between the two measures of preferred occupational activities [COPS (1) and COPS (2)] indicated that the students had a slight tendency to perceive of the activities typically performed in both the idealistic and realistic occupational choices in a similar light. Thirteen of the fourteen coefficients for both groups of students were positive; four were statistically significant for boys and one was statistically significant for girls. Neither group made a significant reversal (significantly negative correlation) with respect to their preferences for work activities.

While the data are not conclusive, there is evidence to suggest that there are no strong inconsistencies or reversals between the idealistic and realistic occupational choices of both groups of high school students. A majority of them expressed the same titles for both choices and the number of positive and statistically significant correlation coefficients implies some consistency between the occupational needs and preferred work activities for the two choices. It would appear, then, that the high school seniors have made a realistic choice of a particular occupation which they believe to be reasonably consistent with their occupational aspirations.

Question #4: Are there differences among clusters of idealistic and realistic occupational choices of twelfth grade boys and girls as measured by the mean scale scores and a profile of mean scale scores on two measures of occupational needs?

Appendix A shows the clusters of the idealistic occupational choices for boys and girls together with the mean score for each of the twenty scales of the MIQ. Similarly, Appendix B shows the clusters of realistic occupational choices, together with the mean score for each of the twenty scales of the MJDQ. A one-way analysis of variance F test was used to determine whether there were significant differences among clusters of occupational choices in terms of the mean scores for each of the twenty scales of the MIQ and MJDQ. Only differences which were significant at either the .05 or .10 levels were reported. Profile similarity coefficients were also computed among pairs of occupational clusters.

A summary of Appendix A suggests that there are very few differences among occupational clusters in terms of the needs students expect to be satisfied by their idealistic occupational choice. Stated another way, both groups of students were relatively homogeneous with respect to their occupational needs. For the boys, significant differences were observed among occupational clusters in only three of the twenty scales; for girls, significant differences were detected on six of the twenty scales. While most of the differences for the boys can be attributed to the systematically lower mean score for the students who chose "Science and Technology", similar systematic trends were not apparent for the girls.

Table 9 shows a matrix of profile similarity coefficients for boys and for girls. The coefficients can range between ±1.00, where (a) .00 indicates no profile similarity, (b) +1.00 indicates that two profiles are identical, and (c) -1.00 indicates the two profiles are exactly opposite.

Table 9

IDEALISTIC OCCUPATIONAL NEEDS (MIQ): PROFILE SIMILARITY COEFFICIENTS AMONG CLUSTERS OF IDEALISTIC OCCUPATIONAL CHOICES FOR TWELFTH GRADE BOYS AND GIRLS

Primary Cluster	Boys				Girls		
	I	II	III	IV	I	II	III
Cluster I (Sci. & Tech.)	1				1		
Cluster II (Serv. & Cult.)	+.264	1			+.667*	1	
Cluster III (Art & Ent.)	+.264	+.053	1		+.556*	+.396	1
Cluster IV (Bus. & Org.)	+.444	+.667	+.222	1	-	-	-

While all of the coefficients were positive, thus indicating that there is some tendency for the profiles of occupational needs for each occupational cluster to be similar, only one of the coefficients was statistically significant for the boys, while two of the three were significant for the girls. In the case of the boys, the profile of occupational needs are similar for those students who selected

cluster II (Serv. & Cult.) and those who selected cluster IV (Bus. & Org.). For the girls, the occupational needs are even more homogeneous. The profile of needs for cluster I (Sci. & Tech.) is similar to both cluster II and cluster III.

This finding, together with the previous findings concerning the lack of differences among mean scale scores, suggests that the students are not very different with respect to the needs they expect to be satisfied by their idealistic occupational choices, or conversely, that the measures of occupational needs utilized are not capable of discriminating among the clusters of the idealistic occupational choices made by twelfth grade boys and girls.

Appendix B displays the clusters of realistic occupational choices made by boys and girls together with their respective mean scale scores derived from the MJDQ. The MJDQ measures the occupational needs each student expects to have satisfied by the occupation he realistically expects to enter.

Significant differences among the clusters of occupational choices were observed on only one scale for the boys and three scales for the girls. The measured occupational needs of students therefore do not discriminate among clusters of their realistic occupational choices. What differences there were among boys appear to be attributable to the lower scale score for cluster III (Art & Ent.); differences among girls can be attributed to the lower scale score for the students who selected cluster I (Sci. & Tech.)

Table 10

REALISTIC OCCUPATIONAL NEEDS (MJDQ): PROFILE SIMILARITY COEFFICIENTS FOR CLUSTERS OF REALISTIC OCCUPATIONAL CHOICES OF TWELFTH GRADE BOYS AND GIRLS

Primary Clusters	Boys				Girls		
	I	II	III	IV	I	II	III
Cluster I (Sci. & Tech.)	1				1		
Cluster II (Serv. & Cult.)	+.368	1			+.294	1	
Cluster III (Art & Ent.)	+.648*	+.530*	1		.000	+.176	1
Cluster IV (Bus. & Org.)	+.158	-.264	-.059	1	-	-	-

Table 10 is a matrix of profile similarity coefficients computed among the profile of mean scale scores for all pairs of occupational choice clusters.

The profile of the realistic occupation needs of boys appears more similar than different. Only cluster IV (Bus. & Org.) seems to have a unique profile of occupational needs. None of the coefficients were statistically significant for the group of girls; each occupational cluster has a somewhat unique profile of occupational needs.

Objective measures of occupational needs do not discriminate among the occupational choices of high school students. There is some evidence to suggest, however, that students (especially girls) who select certain types of occupations may have a profile of occupational needs which is quite different from students who select other occupational clusters.

Question #5: Are there differences among clusters of idealistic and realistic occupational choices of twelfth grade boys and girls as measured by mean scale scores and a profile of mean scale scores on two measures of preferred work activities?

Appendix C shows the clusters of idealistic occupational choices for both boys and girls, together with the mean scale score for each of the fourteen scales of the COPS-(1). The numbers of significant differences which are reported suggest that measures of preferred occupational activities are more capable of discriminating among the occupational choices of boys than it is for the choices of girls. Significant differences were observed among the means of six of the fourteen scales for the boys, but only two scales for the girls. While the differences for the boys appears to be due to the consistently lower mean score for the students who selected cluster I (Sci. & Tech.), a similar systematic affect was not apparent for the group of girls. Girls therefore appear more homogeneous with respect to the types of work activities they prefer than are the boys.

Table 11 is a matrix of profile similarity coefficients computed between the mean scale scores for pairs of occupational choice clusters.

The profile of preferred activities for the boys who chose cluster II (Serv. & Cult.) and cluster IV (Bus. & Org.) was perfectly correlated (+1.00). The other coefficients were not sufficiently high to suggest that the types of activities preferred by each group of students were very related.

Appendix D shows the clusters of realistic occupational choices made by two groups of students, together with their scores on each of fourteen scales COPS-(2). The data show that measures of preferred work activities were not capable of discriminating among the clusters of occupational choices made by either boys or girls. Statistical

significance at the .10 level was detected for only one of the scales for the group of boys, while no significant differences were detected for the girls. In general, the data suggest that both boys and girls were reasonably homogeneous with respect to the type and/or level of activities they realistically expected to perform when they obtained employment.

Table 11

IDEALISTIC PREFERRED WORK ACTIVITIES COPS-1: PROFILE OF SIMILARITY COEFFICIENTS FOR CLUSTERS OF IDEALISTIC OCCUPATIONAL CHOICES FOR TWELFTH GRADE BOYS AND GIRLS

Primary Clusters	Boys				Girls		
	I	II	III	IV	I	II	III
Group I (Sci. & Tech.)	1				1		
Group II (Serv. & Cult.)	+.272	1			+.200	1	
Group III (Art & Ent.)	+.167	+.334	1		+.384	+.230	1
Group IV (Bus. & Org.)	+.167	+1.00*	+.384	1	-	-	-

Table 12 is a matrix of profile similarity coefficients of preferred occupational activities for the realistic occupational choices of boys and girls, respectively.

One of the coefficients for each group of students was statistically significant. The profile of preferred work activities for boys who chose cluster II (Serv. & Cult.) and cluster III (Art & Ent.) were quite similar; the girls who selected clusters I and III also had some similarities. Since the remaining coefficients were low and sometimes negative, the profile of the other clusters of occupational choices suggest that they are quite dissimilar.

Table 12

REALISTIC PREFERRED WORK ACTIVITIES COPS-2: PROFILE OF SIMILARITY COEFFICIENTS FOR CLUSTERS OF REALISTIC OCCUPATIONAL CHOICES FOR TWELFTH GRADE BOYS AND GIRLS

Primary Clusters	Boys				Girls		
	I	II	III	IV	I	II	III
Cluster I (Sci. & Tech.)	1				1		
Cluster II (Serv. & Cult.)	+.111	1			-.272	1	
Cluster III (Art & Ent.)	+.500	.667*	1		+.454*	+.167	1
Cluster IV (Bus. & Org.)	-.111	-.076	.000	1	-	-	-

CONCLUSIONS

The conclusions are based on the findings as they relate to each of the objectives posed for the study. A discussion of the conclusions, and the limitations which have a bearing on them, are presented in the following paragraphs. Because of the exploratory nature of the study and the limited number of students involved, no attempt was made to generalize beyond the sample.

1. The occupational aspirations and expectations of twelfth grade boys and girls are different.

   First, boys tend to select occupations from a larger occupational domain than girls. Boys selected occupations from among four primary occupational clusters while girls selected occupations from among only three clusters with a disproportionately high number (sixty-three percent) of girls selecting occupations classified as "Service and Cultural." The same differences were evident for both idealistic and realistic occupational choices. In general, girls preferred occupations which were more "service-people" oriented than boys. Regardless of the nature of their occupational choices, the level of occupational aspirations of boys and girls were the same; both groups selected occupations which required some kind of post secondary or college preparation.

2. The occupational and educational plans of twelfth grade boys and girls are dissimilar from the occupational and educational achievements of their parents.

First, unlike common belief, most twelfth grade boys and girls do not aspire to nor do they expect to enter an occupational cluster in which either of their parents is currently employed. Only in relatively few cases, did students express interest in pursuing careers similar to their parents. This does not suggest that parents do not in some way influence the career plans of their children, but rather that children do not adhere frequently to the idea of following the "occupational footsteps" of their parents.

Second, twelfth grade students tend to possess educational aspirations which exceed their parents'. That is, all of the students expected to enter a four year college, which, in most instances, equalled or exceeded the amount of education possessed by either parent. The exception was when either or both parents held advanced professional degrees. While it is true that, as a group, the parents' education level was well above national norms, it is difficult to attribute the students' high level of education only to the influence of the parents. Since the students were enrolled in University High School, which is located on the campus of the University of Minnesota and where they were constantly interacting with professionals or persons preparing for professional responsibilities, it is likely that this environment had a very direct influence on both their occupational and educational plans. It seems, therefore, more reasonable to hypothesize that it is the total environment which impacts on the students' occupational-educational aspirations, and that the parents are simply one element within that environment.

3. Twelfth grade boys and girls have made realistic choices of occupations which they believe to be reasonably consistent with their occupational aspirations.

When asked to express the title of and/or describe the occupation to which they aspire and the one they realistically expect to enter, almost all the students selected the same job title from among the same occupational cluster for both choices. This was equally true for boys and girls. The consistency of their expressed vocational choices may be explained in at least two ways: (1) Either the twelfth grade students in this population feel they have the means to attain their aspirations, or (2) twelfth grade students simply are unable to distinguish between their occupational aspirations and expectations. Without additional data, it is not possible to determine which alternative explanation is most plausible.

Neither boys nor girls showed strong inconsistencies or reversals in the psycho-social needs they wanted and those they expected to be satisfied by a job. Stated another way, the correlation co-

efficients obtained between two measures of occupational needs were more positive than negative.

Further, both boys and girls tended to perceive activities which they wanted and those they expected to perform in their realistic occupational choices in a similar light. The correlation coefficients obtained between the two measures of preferred occupational activities were almost all positive and suggest that twelfth grade students do not have strong conflicts in idealistic and realistic occupational choices in terms of types of activities performed.

While the last two findings may be subject to instrument unreliability or inadequate sample size, there appears to be a reasonable consistency among students in the way in which they perceive their idealistic and realistic occupational plans. Whether these plans are actually realistic cannot be determined without additional data.

4. Objective measures of occupational needs are not capable of discriminating among the clusters of expressed idealistic or realistic occupational choices of twelfth grade boys and girls.

Statistical tests revealed that there were very few statistically significant differences among the clusters of expressed idealistic or realistic occupational choices of either boys or girls in terms of the amount of measured occupational needs. Stated another way, even though students selected different occupational clusters, the psycho-social needs they expected to be satisfied appear relatively homogeneous with respect to their measured occupational needs.

The previous conclusions may have resulted from one of the following limitations: This homogeneity may have resulted from (a) the particular sample; (b) broadly defined clusters may have confounded any differences which may have existed; and (c) students using an inappropriate response set. While each of the above are viable explanations for the results, a more plausible explanation is that the students were, in fact, homogeneous with respect to their measured occupational needs. It can be argued that since all of the students planned to attend college and prepare for some professional occupation, the occupational choices of students were homogeneous with respect to occupational "level" rather than the content of the occupational cluster. Furthermore, occupational needs, as measured by the MIQ and MJDQ, are probably more sensitive to occupational "level" than to any substantive differences which may exist among occupational clusters. Additional research is required to determine which of the alternatives is most correct.

5. Objective measures of preferred occupational activities are not capable of discriminating among clusters of expressed idealistic or realistic occupational choices of twelfth grade boys and girls.

Statistical tests revealed that significant differences were observed among occupational clusters for about one-half (6 of 14)

of the scales for the idealistic choices of boys, but only one scale was significant for their realistic choice. The results were less satisfying for the occupational choices of girls; significant differences among clusters of their idealistic occupational choices were observed for only two scales of the COPS-1 and none were observed among clusters of their realistic occupational choices. While this conclusion is subject to the same limitations as those listed for the previous conclusions (e.g. reliability, inadequate sample size, definition of clusters, improper response set) an equally plausible explanation is that, like measures of occupational needs, the students were also homogeneous with respect to the "level" of activities they want to perform. Since the California Occupational Preference Survey measures and classifies activities according to skill levels, it seems likely that students with realistically high occupational-educational aspirations may not differ with their preferences for occupational activities. Girls appear to be more homogeneous with respect to preferred work activities than the boys. It also appears that boys realistically expect to be performing many of the same occupation activities, but idealistically aspire to perform roles which are quite different. Additional research is necessary to further explore these suppositions.

RECOMMENDATIONS

In light of the population and other limitations of the study, the following recommendations seem warranted.

1. The study should be replicated with a larger group of students who are more heterogeneous with respect to their (a) socio-economic backgrounds, (b) occupational-educational aspirations, and (c) educational experiences.

2. The students who participated in the study should be followed-up to determine whether their expressed occupational-education expectations were realistic.

3. Further tests should be conducted to determine whether the measures of occupational needs and preferred work activities are more sensitive to occupational "level" than they are to the substantive content of the occupational "cluster".

4. The occupational needs and preferred work activities expressed by students should be compared for similarity with the norms for persons who are currently employed in various occupations or occupational clusters.

5. Additional research should be conducted to identify those environmental factors which have the greatest influence on the occupational and educational aspirations of high school students.

6. Counselors should consider using group counseling techniques for high school boys and girls who are homogeneous with respect to clusters of their expressed occupational choices or according to the level of their occupational-educational aspirations.

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APPENDIX A

IDEALISTIC OCCUPATIONAL NEEDS: MEAN MIQ SCALE SCORES FOR THE CLUSTERS OF IDEALISTIC OCCUPATIONAL CHOICES MADE BY TWELFTH GRADE BOYS AND GIRLS

Scale	Boys (N=22) I (Sci&Tech) N=7	II (Ser&Cul) N=6	III (Arts&Ent) N=5	IV (Bus) N=4	F (3,18df)	Girls (N=24) I (Sci&Tech) N=4	II (Ser&Cul) N=15	III (Arts&Ent) N=5	F (2,21df)
1. Ability Utilization	20.6	19.5	20.0	19.5	.055	22.5	19.1	23.0	3.76**
2. Achievement	18.0	19.2	21.8	18.0	1.060	17.5	14.9	19.8	2.59*
3. Activity	19.7	17.8	20.8	20.5	.613	21.30	19.3	20.8	.830
4. Advancement	18.4	20.0	17.8	20.8	.705	21.4	19.7	22.6	1.36
5. Authority	13.9	15.5	15.4	17.3	.541	13.5	11.9	17.2	2.72*
6. Company Policies & Practices	21.4	21.0	20.4	21.8	.124	21.5	21.9	22.6	.136
7. Compensation	14.9	15.7	17.6	15.3	.486	16.30	13.4	15.2	1.544
8. Co-workers	14.7	17.3	19.2	18.5	1.72	18.0	18.9	19.0	.122
9. Creativity	16.4	20.3	19.0	19.3	1.29	17.0	18.6	19.2	.445
10. Independence	17.7	17.0	17.4	19.3	.583	18.80	17.7	20.4	.801
11. Moral Values	11.6	19.0	18.0	19.5	4.87**	16.30	19.0	17.8	.580
12. Recognition	18.3	19.2	17.2	20.3	.554	18.80	16.6	18.4	.602
13. Responsibility	17.1	19.0	21.0	21.8	2.134	19.5	18.3	19.4	.541
14. Security	20.5	21.2	21.4	22.3	.290	21.0	21.2	21.4	.121
15. Social Service	18.6	20.0	22.6	21.3	.658	20.5	17.5	22.4	2.89
16. Social Status	15.4	16.8	18.0	27.8	.501	18.85	17.1	16.4	.398
17. Supervision-Human Relations	18.7	22.2	18.6	20.8	3.29**	20.30	18.5	18.2	.331
18. Supervision-Technical	16.4	21.7	15.6	20.5	5.01**	21.0	20.7	14.6	2.70*
19. Variety	17.6	20.8	19.0	20.8	.664	19.30	17.7	22.0	1.161
20. Working Conditions	15.5	17.3	17.4	15.8	.272	11.00	13.1	19.6	4.85**

NOTE: **Significant at .05 (F=3.16)
*Significant at .10 (F=2.44)

NOTE: **Significant at .05 (F=3.47)
*Significant at .10 (F=2.59)

APPENDIX B

REALISTIC OCCUPATIONAL NEEDS: MEAN MJDQ SCALE SCORES FOR THE CLUSTERS OF REALISTIC OCCUPATIONAL CHOICES MADE BY TWELFTH GRADE BOYS AND GIRLS

Scale	Boys (N=22) I (Sci&Tech) N=8	II (Ser&Cul) N=6	III (Arts&Ent) N=4	IV (Bus) N=4	F (3,18df)	Girls (N=24) I (Sci&Tech) N=5	II (Ser&Cul) N=14	III (Arts&Ent) N=5	F (2,21df)
1. Ability Utilization	16.1	18.5	16.8	19.3	.969	16.8	17.6	19.4	1.09
2. Achievement	18.8	20.2	19.3	18.8	.225	20.2	20.8	23.2	1.732
3. Activity	22.5	22.0	20.8	20.8	.502	20.2	22.6	23.2	2.50
4. Advancement	19.9	21.5	17.8	17.3	2.108	19.2	19.7	22.2	1.271
5. Authority	20.5	20.7	14.8	19.3	4.50	19.4	21.1	20.4	.432
6. Company Policies & Practices	17.4	21.2	17.3	18.3	1.15	18.2	19.9	20.4	.502
7. Compensation	17.5	21.5	18.5	15.0	1.52	17.0	20.2	18.0	2.06
8. Co-workers	17.4	16.0	18.3	17.8	.389	17.8	16.9	19.8	.649
9. Creativity	16.6	16.5	17.8	18.5	.278	16.6	16.5	15.2	.418
10. Independence	16.8	19.7	19.5	18.3	.591	17.2	20.9	22.0	2.394
11. Moral Values	17.8	19.3	19.5	19.5	.246	15.6	17.4	19.4	.569
12. Recognition	16.5	20.5	17.8	18.3	1.045	16.4	15.3	16.2	.127
13. Responsibility	20.0	19.8	18.3	20.3	.158	16.8	20.1	21.6	1.900
14. Security	22.4	21.8	21.8	19.5	.705	19.2	22.5	22.6	4.820**
15. Social Service	16.6	18.5	17.8	18.0	.267	15.6	16.4	18.6	1.334
16. Social Status	18.9	20.2	19.0	18.3	.278	15.6	19.9	20.6	5.031**
17. Supervision-Human Relations	18.0	19.7	19.0	16.8	.336	16.2	20.6	22.4	3.843**
18. Supervision-Technical	15.3	17.7	16.3	18.5	.942	19.0	17.0	19.8	1.978
19. Variety	19.3	20.7	19.3	19.0	.295	18.2	19.5	20.0	.415
20. Working Conditions	19.6	22.2	18.5	18.0	1.43	20.8	23.5	19.8	2.954*

NOTE: **Significant at .05 level (F=3.16)
*Significant at .10 level (F=2.44)

NOTE: **Significant at .05 level (F=3.47)
*Significant at .10 level (F=2.59)

APPENDIX C

IDEALISTIC PREFERRED WORK ACTIVITIES: MEAN COPS-(1) SCORES FOR THE CLUSTERS OF OCCUPATIONAL CHOICES MADE BY TWELFTH GRADE BOYS AND GIRLS

Scales	Boys(N=22) I (Sci&Tech) N=7	II (Ser&Cul) N=6	III (Arts&Ent) N=	IV (Bus) N=4	F (3,18df)	Girls(N=24) I (Sci&Tech) N=7	II (Ser&Cul) N=15	III (Arts&Ent) N=5	F (2,21df)
1. Aesthetic, Professional	13.7	16.5	15.2	12.3	1.482	15.8	12.9	14.0	1.377
2. Aesthetic, Skilled	16.1	19.5	16.6	14.0	1.451	20.0	16.5	22.4	4.009**
3. Business, Skilled	17.7	14.3	15.0	11.5	.742	16.5	16.3	14.2	.311
5. Clerical	11.4	16.0	13.4	13.8	1.508	18.3	14.6	14.6	1.111
6. Linguistic, Professional	13.3	17.2	14.6	13.8	1.040	16.8	14.9	16.0	.201
7. Linguistic, Skilled	9.3	17.2	16.8	15.5	3.878**	14.3	9.0	13.8	.280
8. Outdoor	10.0	14.8	14.6	13.5	2.413	11.8	11.3	11.6	.037
9. Science, Professional	8.3	13.7	13.8	11.5	2.942**	10.5	11.8	12.2	.102
10. Science, Skilled	11.9	17.7	16.8	13.3	1.459	15.0	14.7	12.4	.384
11. Service, Professional	8.4	15.7	14.8	12.8	3.59**	15.5	12.9	10.8	4.739**
12. Service, Skilled	9.1	13.8	15.8	10.5	2.507*	12.80	12.5	12.8	.004
13. Technical, Professional	11.4	16.2	15.6	15.5	1.027	11.8	12.00	13.3	.448
14. Technical, Skilled	7.7	15.0	15.4	13.5	6.205**	9.4	12.9	12.0	.126

NOTE: **Significant at .05 level (F=3.10)
*Significant at .10 level (F=2.38)

NOTE: **Significant at .05 level(F=3.49)
*Significant at .10 level(F=2.59)

APPENDIX D

REALISTIC PREFERRED WORK ACTIVITIES: MEAN COPS-(2) SCALE SCORES
THE CLUSTERS OF OCCUPATIONAL CHOICES MADE BY
TWELFTH GRADE BOYS AND GIRLS

Scales	Boys(N=22) I (Sci&Tech) N=8	II (Ser&Cul) N=7	III (Arts&Ent) N=7	IV (Bus) N=4	F (3,18df)	Girls(N=24) I (Sci&Tech) N=5	II (Ser&Cul) N=14	III (Arts&Ent) N=5	F (2,21df)
1. Aesthetic, Professional	4.4	5.0	5.8	6.8	.378	5.0	3.10	5.2	.962
2. Aesthetic, Skilled	4.4	4.7	6.8	5.2	.288	4.4	4.5	6.0	.267
3. Business, Professional	4.4	2.3	6.0	6.5	.998	6.2	4.2	4.8	.991
4. Business, Skilled	4.1	2.8	7.0	9.0	2.841	3.6	2.[illegible]	3.4	.067
5. Clerical	3.8	3.3	3.5	6.3	.753	3.2	3.3	1.8	.314
6. Linguistic, Professional	3.8	4.8	6.8	3.8	.915	4.2	4.3	2.6	.298
7. Linguistic, Skilled	2.1	3.3	5.2	7.3	2.164	1.8	5.2	4.0	1.179
8. Outdoor	4.0	3.2	4.5	3.8	.175	3.6	3.9	3.6	.028
9. Science, Skilled	2.5	2.2	4.3	4.0	1.600	1.0	1.5	2.4	.373
10. Science, Professional	2.5	1.7	4.0	3.3	1.074	2.0	3.2	3.2	.382
11. Service, Professional	3.6	2.8	4.8	3.5	.434	2.0	1.9	4.4	1.359
12. Service, Skilled	1.4	2.0	2.0	3.8	.871	1.8	2.8	2.6	.145
13. Technical, Professional	3.1	317	2.8	4.0	.241	1.8	2.8	3.6	.194
14. Technical, Skilled	3.4	3.3	2.8	7.2	.573	1.0	3.0	2.6	.952

NOTE: **Significant at .05 level (F=3.10)
*Significant at .10 level (F=2.38)

NOTE: **Significant at .05 level(F=3.49)
*Significant at .10 level(F=2.59)

APPENDIX E

PRIMARY CLUSTER I (Sci. & Tech.)

SCIENCE (Professional)

Anatomist
Astronomer
Biologist
Chemist
Dentist
Health physicist
Mathematician
Medical specialist
Microbiologist
Museum curator
Nutritionist
Pathologist
Pharmacologist
Pharmacist
Physicist
Physiologist
Research scientist
Scientist (semi-independent)
Statistician
Veterinarian

SCIENCE (Skilled)

Biological aide
Chiropractor
Fingerprint classifier
Laboratory technician
Meter inspector
Meteorologist
Nuclear medical technologist
Paleontological helper
Research assistant
Technical assistant
Technician (medical, x-ray, etc.)
Tissue technologist
Weather observer

TECHNICAL (Professional)

Aeronautical engineer
Airplane pilot
Automotive engineer

TECHNICAL (Professional) (cont.)

Ceramic engineer
Civil engineer
Electric engineer
Electronic engineer
Factory manager
Industrial engineer
Mechanical engineer
Navigator
Ships' commander
Ships' officer

TECHNICAL (Skilled)

Aircraft mechanic
Assembler
Automobile mechanic
Bricklayer
Carpenter
Construction laborer
Draftsman
Dressmaker
Electronic technician
Engineering technician
Optician
Plasterer
Plumber
Printer
Roofer
Sewing machine operator
Television repairman
Upholsterer
Weaver
Welder

PRIMARY CLUSTER II (Serv. & Cult.)

SERVICE (Professional)

Clergyman
Clinical psychologist
Counselor
Home Economist
Nurse
Occupational therapist
Physician
Probation officer
Psychotherapist
Rehabilitation counselor
Social worker
YMCA official
Policeman, detective (officer)
Welfare workers

SERVICE (Skilled)

Airline stewardess
Barber
Bartender
Caretaker
Claims adjuster
Cook
Customs adjuster
Customs inspector
Guard
Hospital attendent
Housekeeper
Maid
Nurses aide
Policeman, fireman
Porter
Psychiatric aide
Taxi driver
Travel agent
Usher
Waiter

GENERAL CULTURAL AND LINGUISTIC (Professional)

Announcer
Author
Book reviewer
Editor
Editorial writer

GENERAL CULTURAL AND LINGUISTIC (Professional) (cont.)

Judge
Lawyer
Lecturer
Librarian
Literary critic
Lyric writer
Novelist
Philologist
Playwright
Poet
Professor
School principal
School superintendent
Short story writer
Teacher

GENERAL CULTURAL AND LINGUISTIC (Skilled)

Editing clerk
Editorial assistant
Interpreter
Librarian
Prompter
Proofreader
Reporter
Story analyst
Title writer
Translator

PRIMARY CLUSTER III (Art & Ent.)

AESTHETIC, ARTS & ENTERTAINMENT

Architect
Arranger (including floral arranger)
Art critic
Artist (landscape, advertising, etc.)
Athlete
Choreographer
Dancer
Display man
Designer (fashion)
Designer (industrial)
Hair stylist
Illustrator
Interior decorator
Musician (instrumental)
Model (fashion, etc.)
Oil painter
Orchestrator
Photographer
Sculptor
Sign painter
Stylist
Vocalist
Window decorator

PRIMARY CLUSTER IV (Bus. & Org.)

BUSINESS (Contact)

Auctioneer
Buyer
Dealer (retail & wholesale)
Entrepeneur
House canvasser
Interviewer
Peddler
Promoter
Public relations counselor
Real estate agent
Salesman
Underwriter

CLERICAL

Bookkeeper
Calculating machine operator
Cashier
Court reporter

CLERICAL (Cont.)

Currency sorter
Dispatcher
File clerk
Hotel clerk
Office boy/girl
Postal clerk
Reservation clerk
Salesclerk
Secretary
Shipping clerk
Stenographer
Telegraph operator
Teller
Ticket agent
Typist

ORGANIZATION (Business, Gov. etc.)

Accountant
Banker
Broker
Cabinet officer
Foreman
Notaries
Industrial tycoon
Union officials
Corporation cashier
Employment manager
Executive
Owners

PRIMARY CLUSTER V (Outdoor)

OUTDOOR

Animal breeder
Cattle rancher
County agent
Dairyman
Farm advisor
Farm equipment operator
Farm laborer
Farm owner
Fish and game warden
Fisherman
Flower grower
Forester
Grounds keeper
Hunting and fishing guide
Irrigator
Landscape gardener
Nurseryman
Park ranger
Playground worker
Poultry man
Sprayer
Telephone lineman
Tobacco grower
Tree surgeon
Vegetable grower
Wildlife specialist